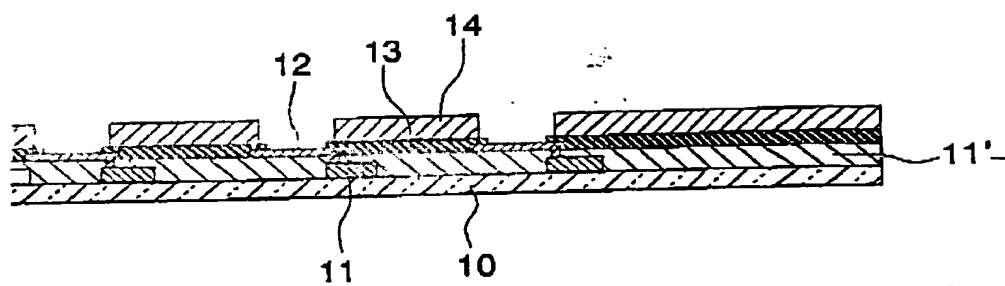


FIG. 1



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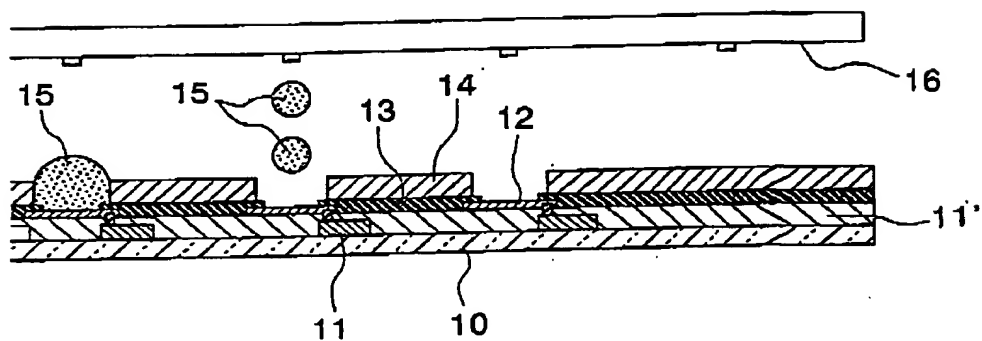


FIG. 2B

A cross-sectional view of a substrate 10 with a patterned layer 11. The patterned layer 11 is formed on the substrate 10 and has a series of rectangular openings. Three solder balls 15 are mounted on the substrate 10, positioned over the openings in the patterned layer 11. The solder balls 15 are shown in cross-section, with a central core 12 and a surrounding solder material 13. The solder balls 15 are connected to the substrate 10 by solder joints 14.

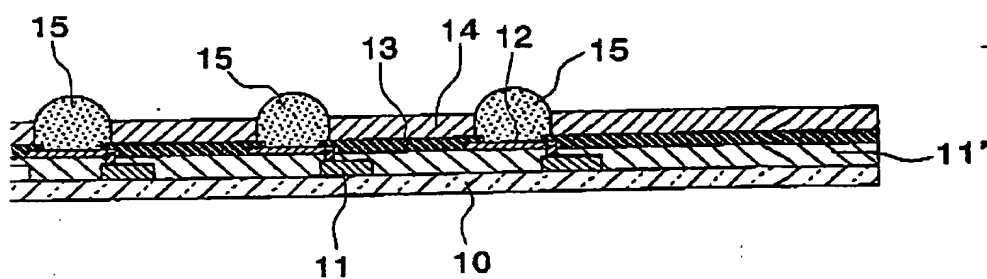


FIG. 2C

FIG. 2C is a cross-sectional view of a semiconductor device. It shows a substrate 10 with a patterned layer 11. A thin layer 12 is on top of 11, and a thicker layer 13 is on top of 12. A layer 14 is on top of 13, and a layer 17 is on top of 14. The layers 10, 11, 12, 13, 14, and 17 are shown in cross-section, with 10 being the base substrate and 11 being a patterned layer. The layers 12, 13, 14, and 17 are shown in cross-section, with 12 being a thin layer, 13 being a thicker layer, 14 being a thin layer, and 17 being a thin layer.

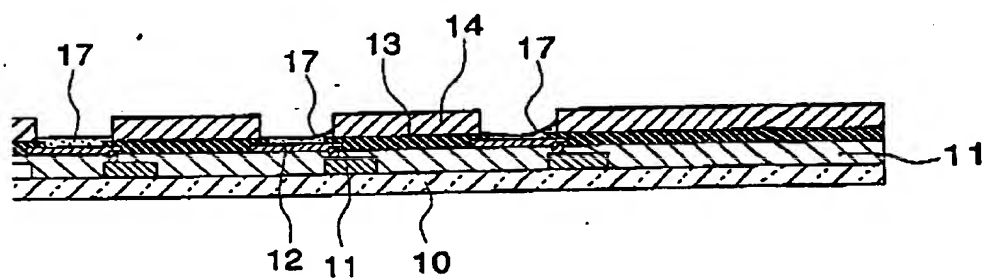


FIG. 3A

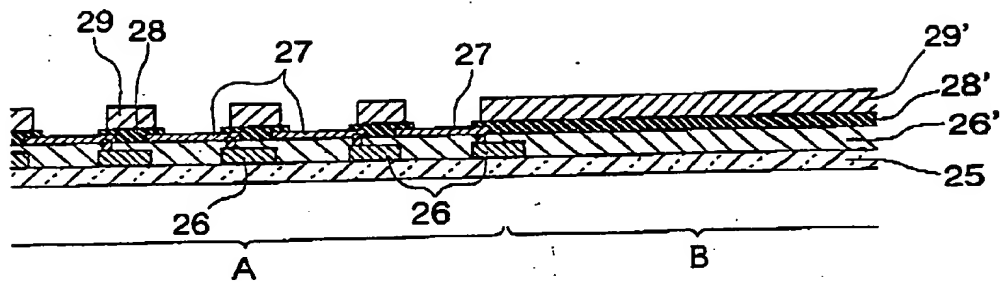


FIG. 3B

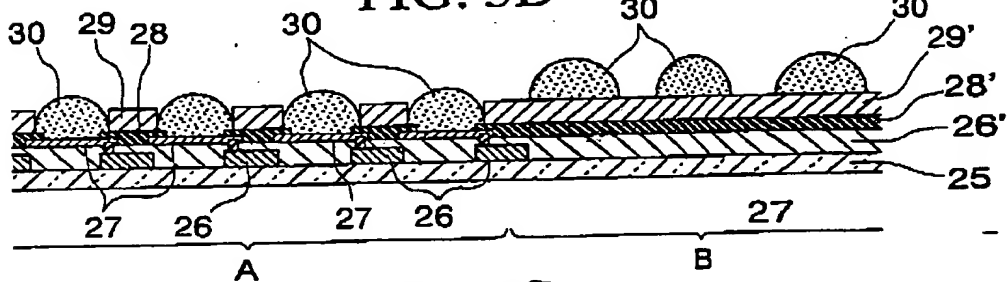


FIG. 3C

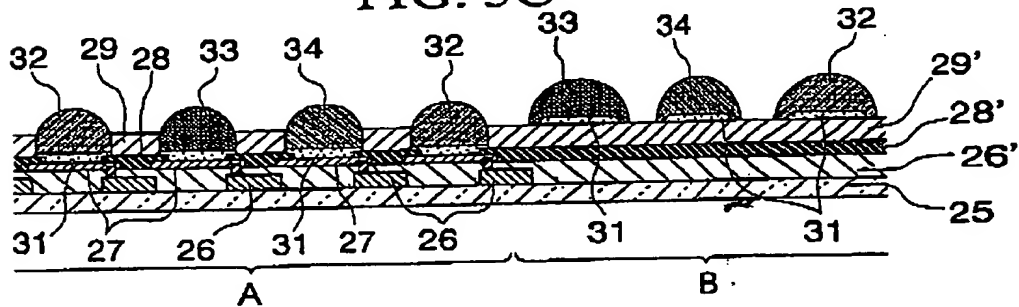
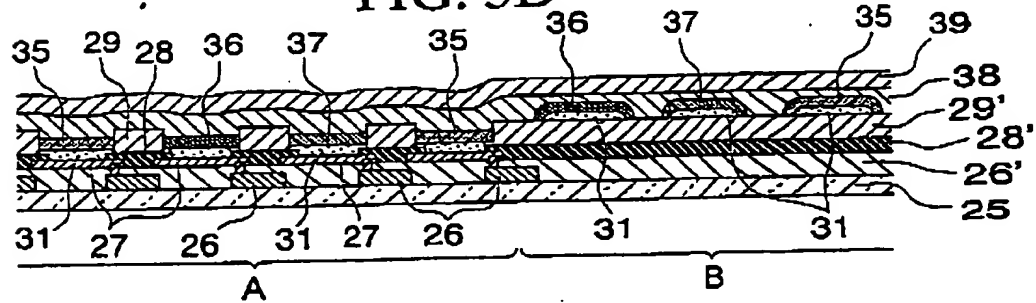


FIG. 3D



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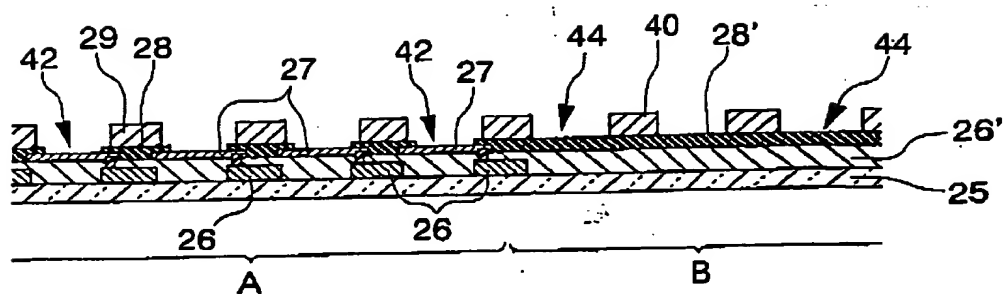


FIG. 4B

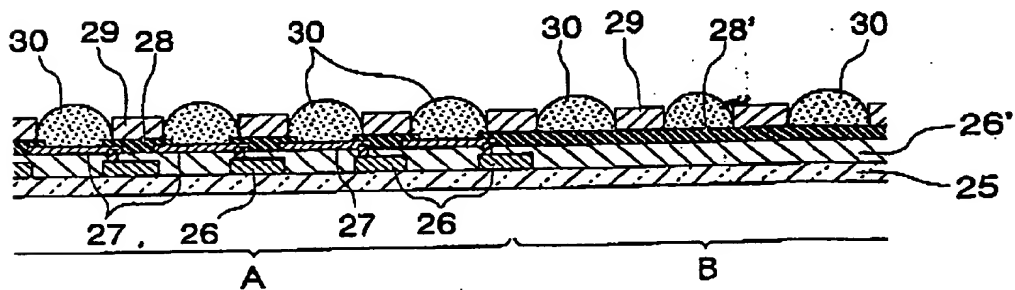


FIG. 5A

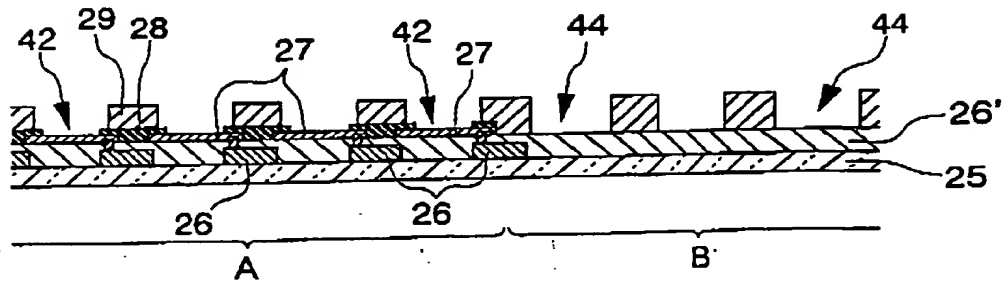


FIG. 5B

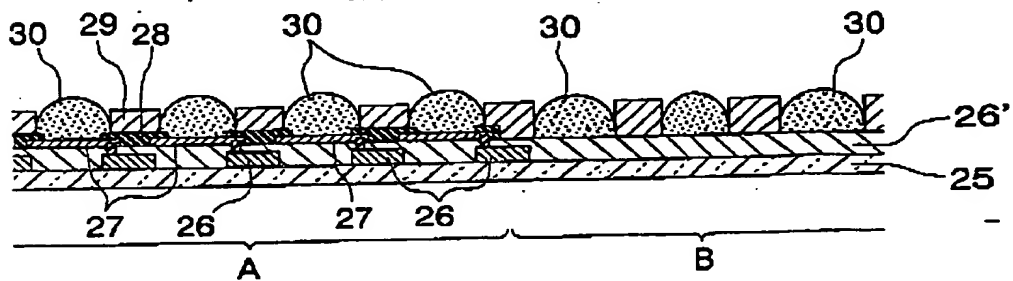


FIG. 5C

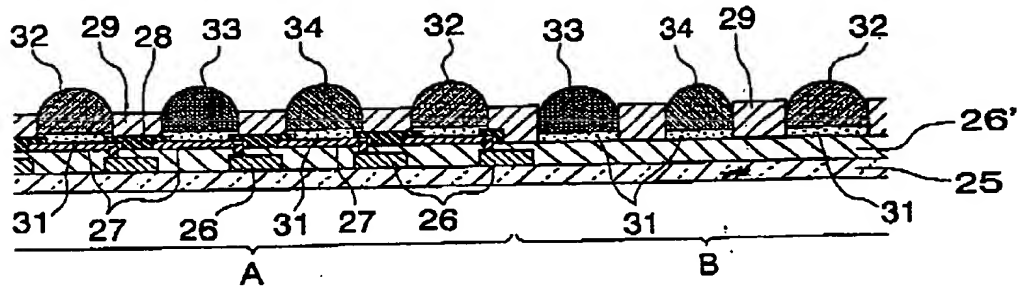


FIG. 5D

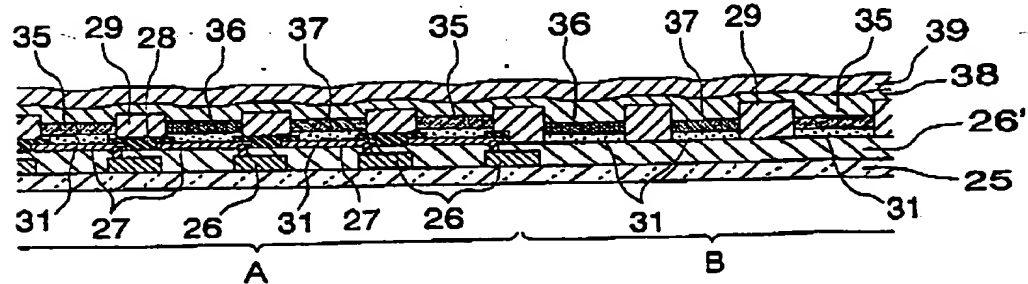


FIG. 6A

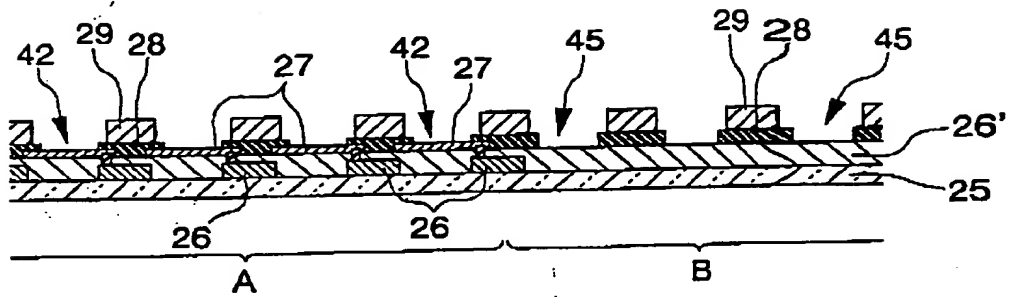


FIG. 6B

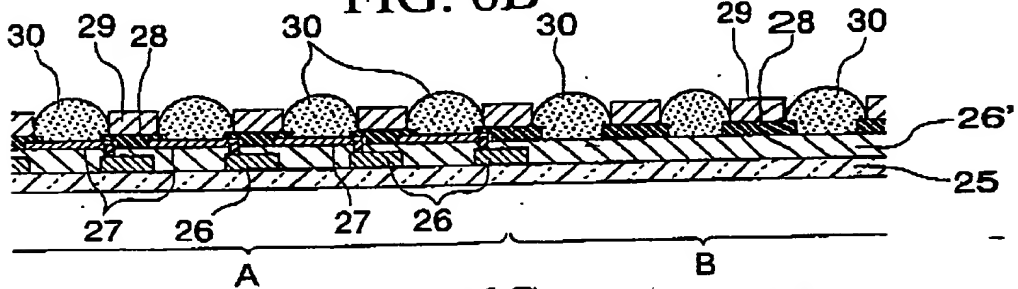


FIG. 6C

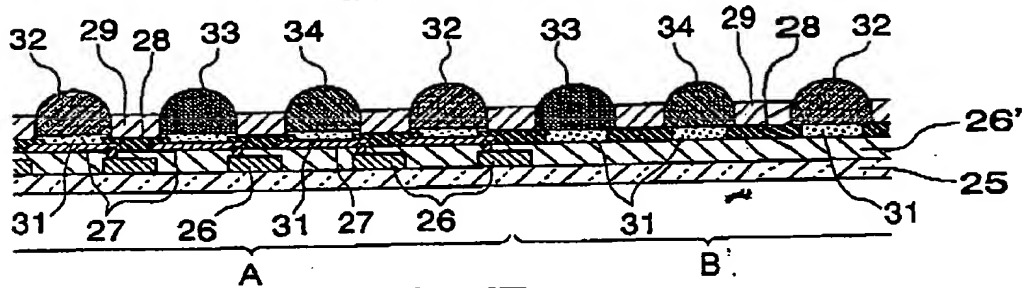


FIG. 6D

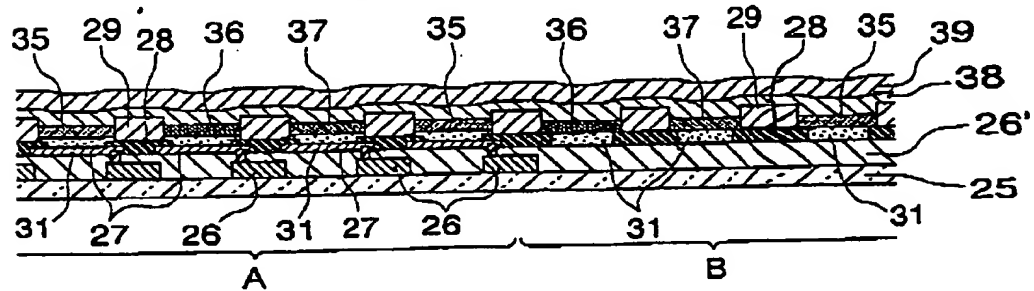


FIG. 7A

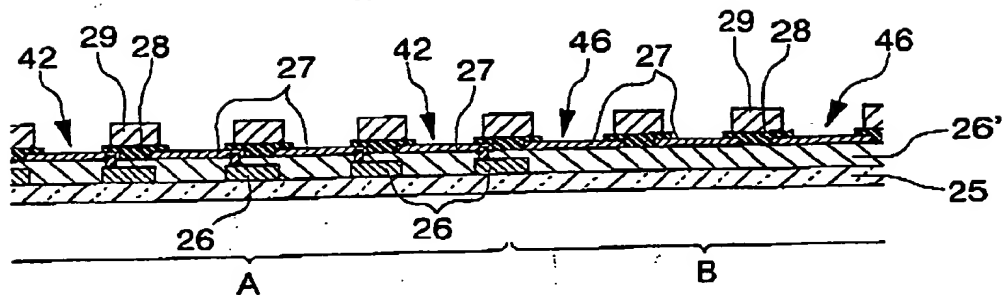


FIG. 7B

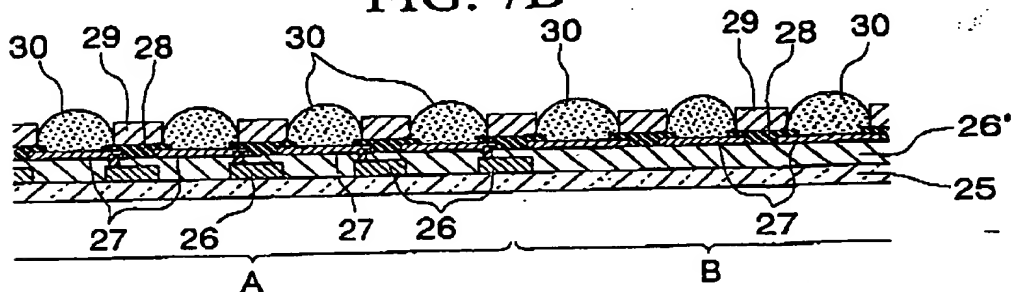


FIG. 7C

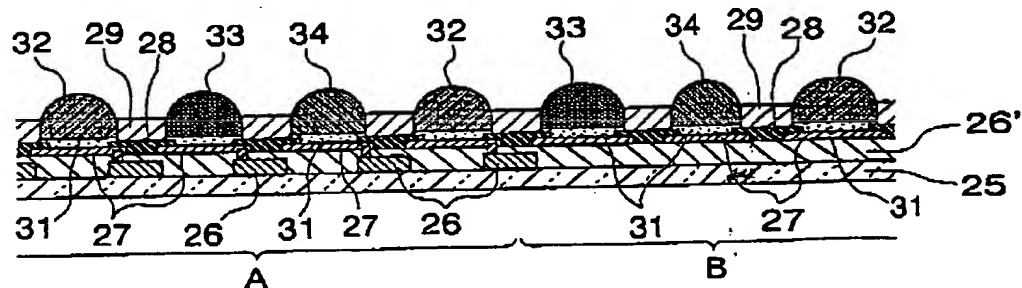
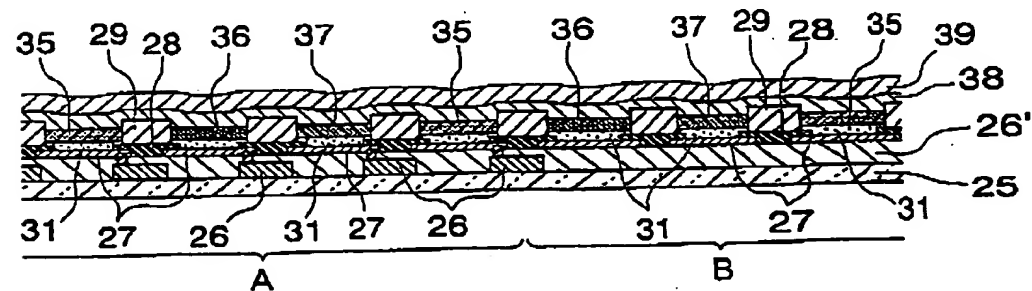


FIG. 7D



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FIG. 8A

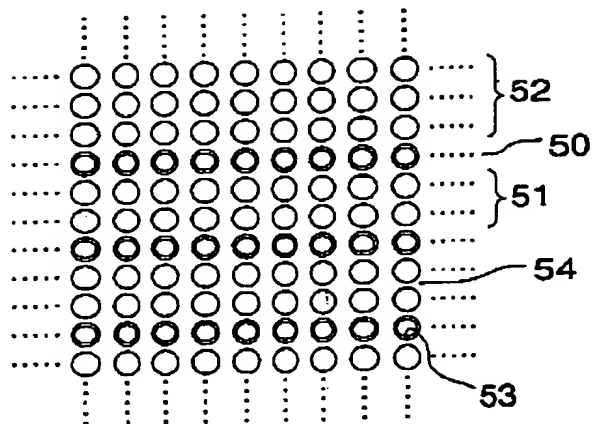


FIG. 8B

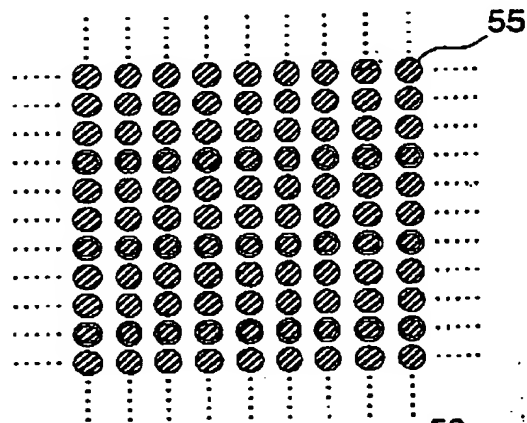
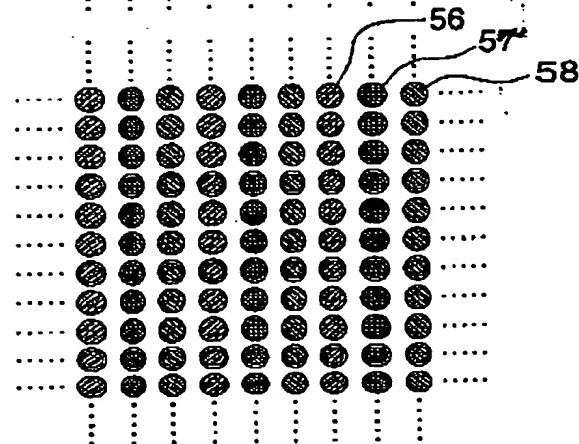


FIG. 8C





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FIG. 9A

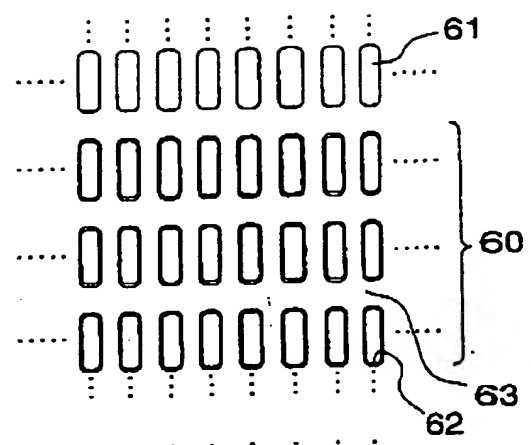


FIG. 9B

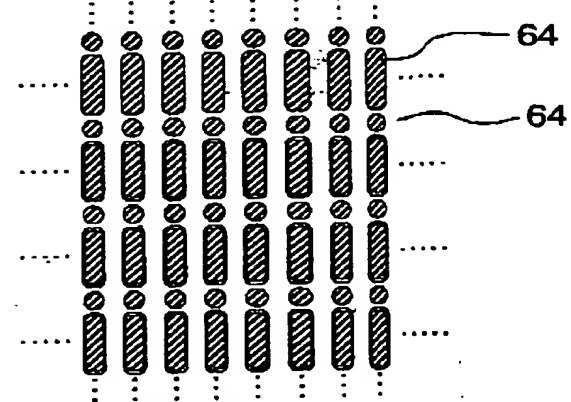


FIG. 9C

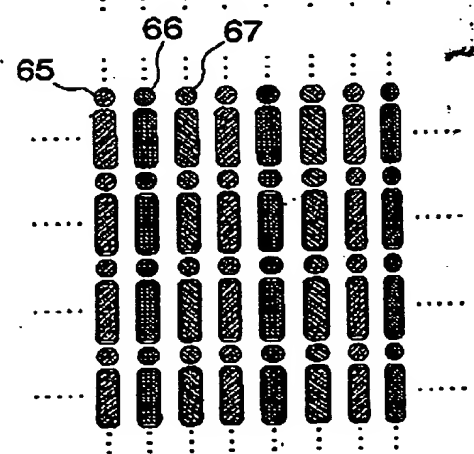


FIG. 10A

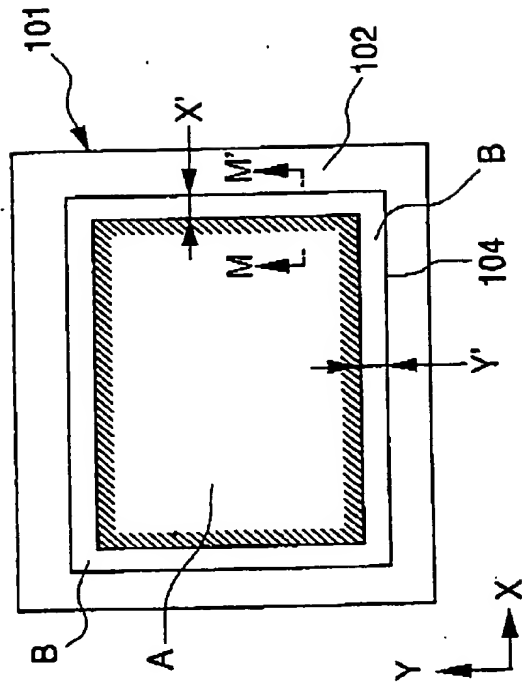


FIG. 10B

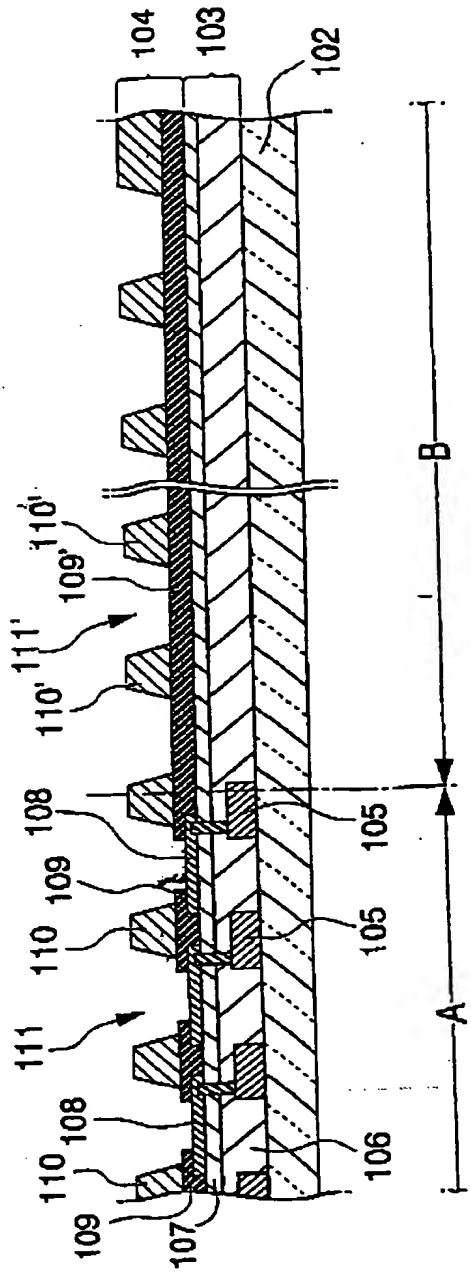


FIG. 11A

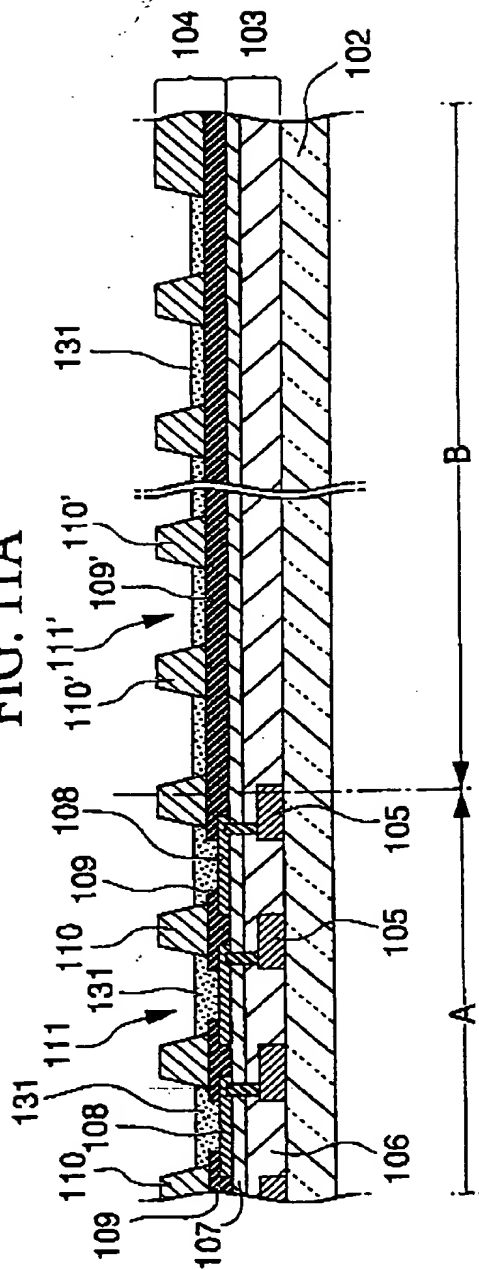


FIG. 11B

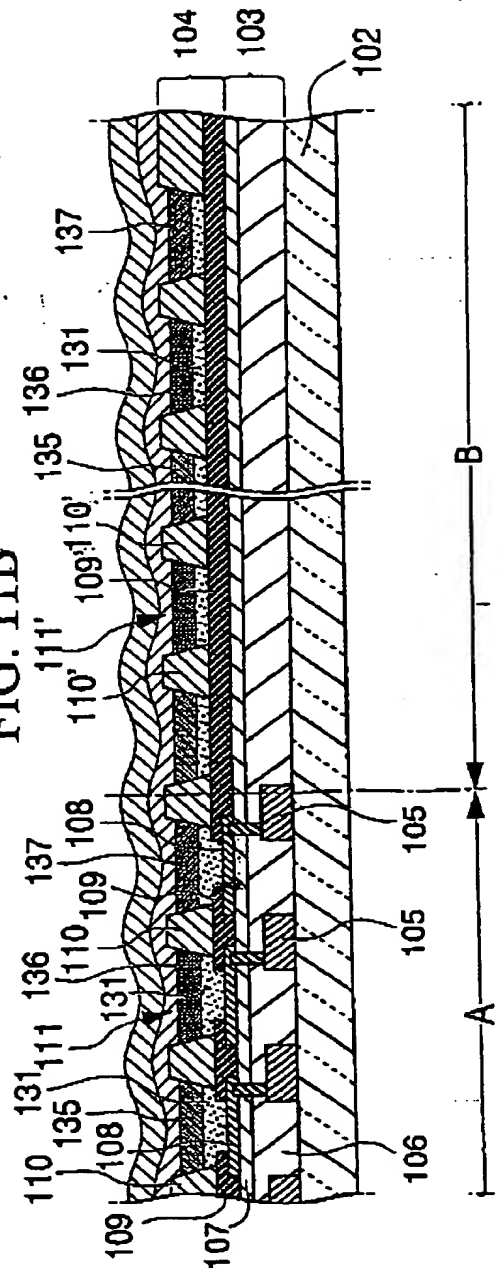


FIG. 12

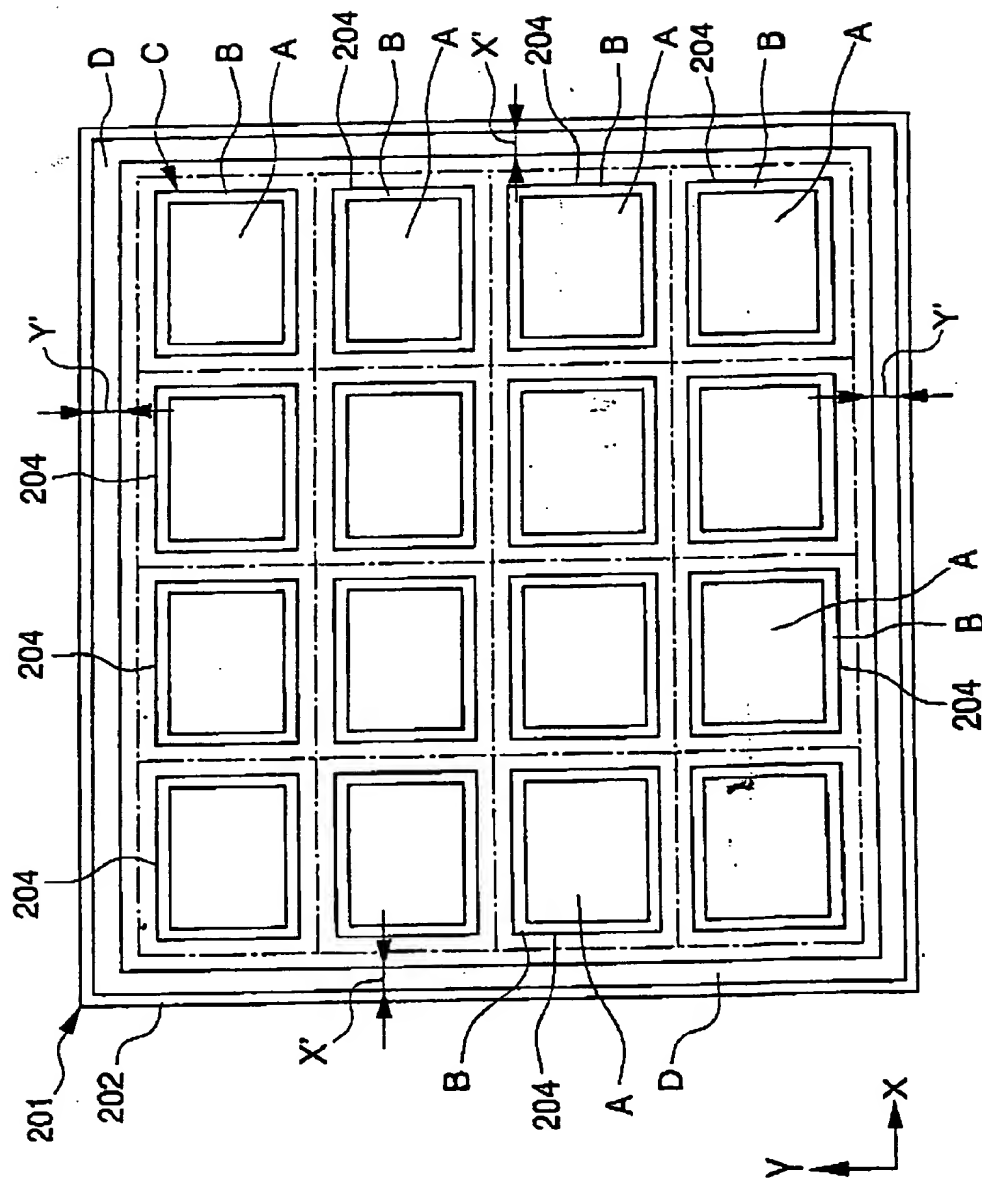


FIG. 13A

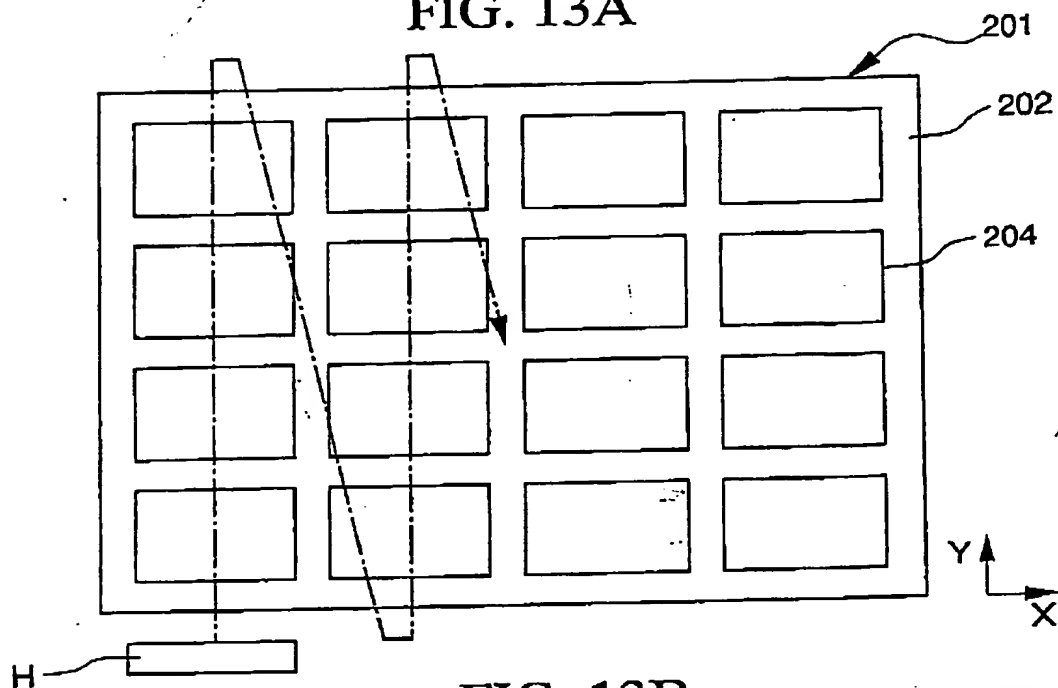


FIG. 13B

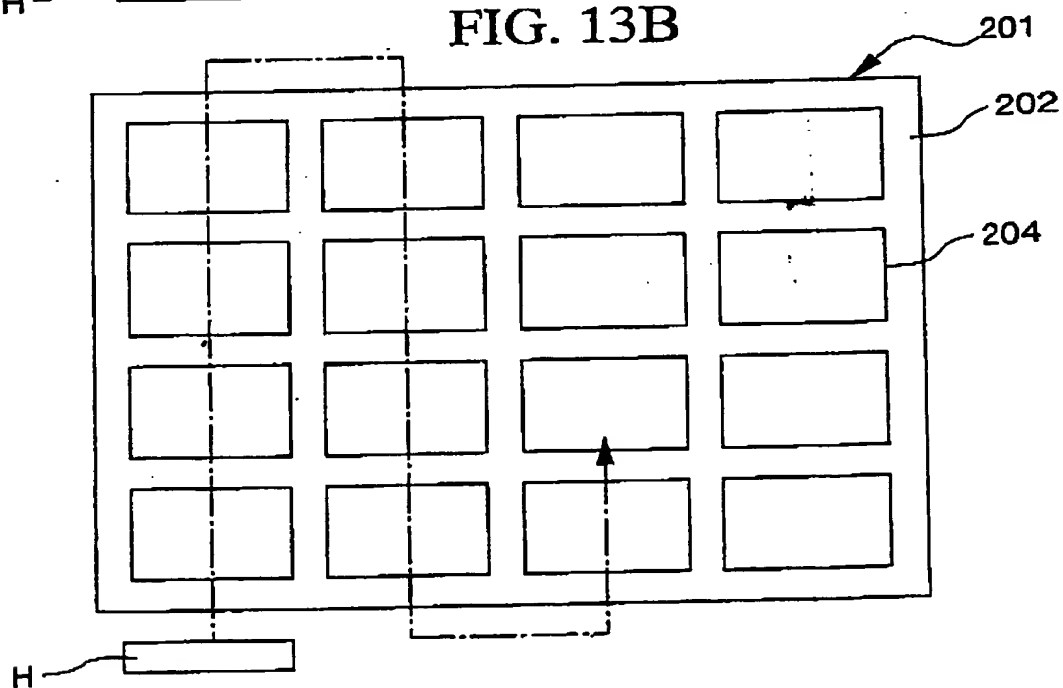
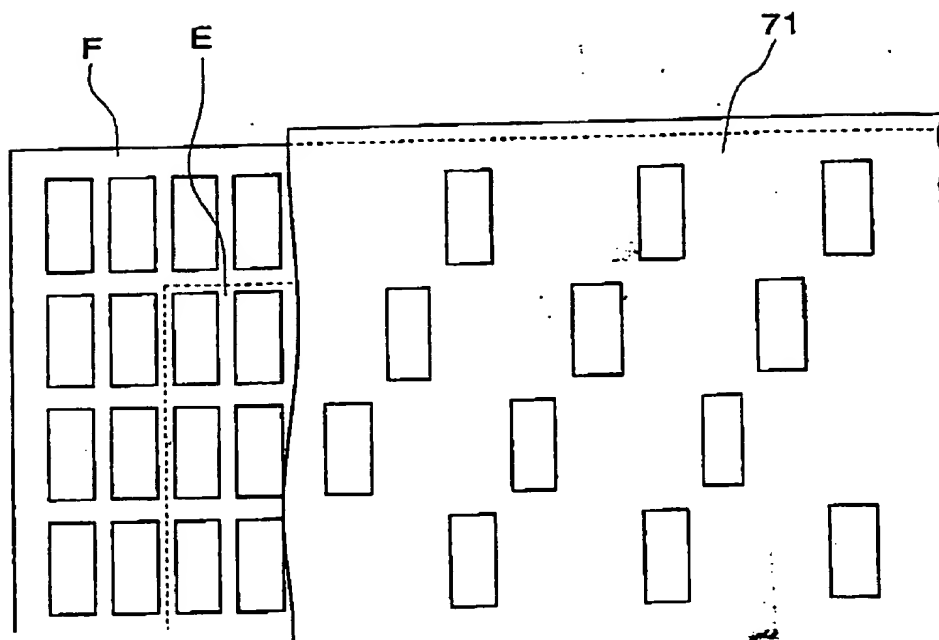


FIG. 14



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FIG. 15A

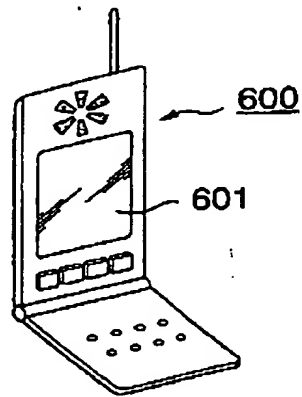


FIG. 15B

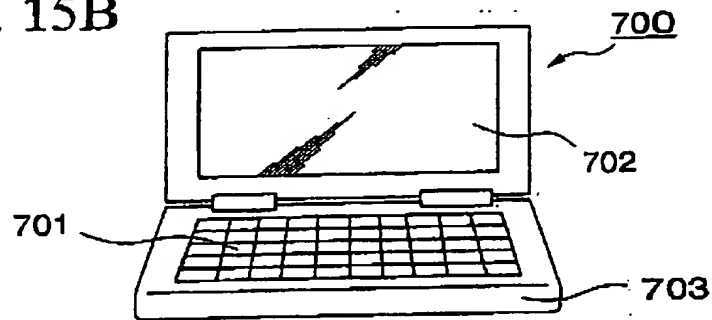


FIG. 15C

